



CUSTOMER ENGINEERING POLICIES AND PROCEDURES

Memo No: 151

Date: 5/15/60

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SUPERSEDES

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SUBJECT: TECH TIPS -- NUMERIC TYPEWRITER

A. GENERAL

Several of you have reported the "6" key being actuated after a period. This has been traced to Relay 6 in most cases. Be sure that both contacts of Relay 6 are closed for the same time duration. Adjustment of the normally open spacing will cure this. In some cases, the mounting screws are too long and will distort the contact spacing by digging into the fiber material next to the coil.

According to IBM, the reason for our experiencing an excessive number of tabulating malfunctions is that many of us and many of our customers are in the habit of leaving all the tab stops in a "set" position, such that the carriage moves two spaces on a tab. This causes excessive wear on the tab levers and linkage, and results in unreliable operation. To overcome this unnecessary wear, it is recommended that all the tab stops be left in a "clear" position except for those that are required for a specific output format. All customers should also be instructed in this respect.

If the plastic liner of the typewriter solenoid is distorted, or if the solenoid needs a thorough cleaning it might be convenient to use a No. 14 drill. Realize that this whole operation should be done by hand.

Be sure to check the mounting screws for the typewriter solenoids occasionally. If these screws work loose and drop on to the diode matrix, you are in trouble.

There is a spare solenoid under the plus key which many servicemen are unaware of; if it becomes necessary to replace a solenoid keep this in mind.

Do not remove the diode package in location K43 with the DC on. If you do, the following will take place: The type pulse signal will go high. Relay 6 will be picked and the space key solenoid will be energized continuously. This allows constant current through R46 in the typewriter (47 ohms). Since the wattage rating of this resistor was not designed for this type of duty cycle, it will burn. All of the previous is predicated on the fact that OC2 is off. It should be pointed out that if you lose the minus 20 voltage supply all of the relays in the typewriter will be picked and the Z key solenoid will be energized continuously with the same result; that is, R46 will burn up.

There have been reports of light printing at one end of the typewriter. The cams on the typewriter are adjustable and will clear up some of these problems. Where the power roll has worn smooth and the cam skips, it is advisable to rough up the roll with fine sandpaper. Another effective cure for light printing of typewriter, especially cases that show up only in the morning, is the ring and cylinder adjustment outlined in the Typewriter Maintenance Manual, page 22.



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Neil Fisk told George Arsulich this one: A fast impatient operator is watching an AR or L19 typeout and while it is carriage returning, puts the enable switch on and types 'Q' or 'P'. Result -- Nothing gets into L23 and/or the photo reader light stays on. Also, there is no clicking of the typewriter relays. The enable switch was put on while slow out had a stop in the OB's. The stop was still there after the 'Q' or 'P' key was hit, and therefore was preventing HC from setting OF1 which gates the input levels into the OB's. Watching the ready light or hitting enabled 'S' first would cure this.

This reminded Norm Fritsch of another operator who used long tabs and hit the 'S' key before the tab finished on input. This reset the OC's before an (E) could be generated for the tab at the fall of HC. No tab means that his numbers went in at one half the expected value.

A worn typewriter ribbon with threads hanging from either edge should be replaced in order to guard against typewriter trouble. (Ribbon mechanism in particular.)

Do not speed up typewriters. There are two ways this has been done in the past and they are both verboten. If we specify how they have been done then we are afraid that some of the new men may try. Either method is not to be used.

B. ALPHANUMERIC TYPEWRITERS #241 AND ABOVE

Norm Fritsch has compiled a list of known problems which have been encountered with the Alphanumeric typewriter.

1. Some of the DC margins are not as good as they used to be. The CF3 packages do not hold down to -20v. Instead, they will hold at about -16 or -17v. This increases the tendency toward noise on such margins as C up.
2. If you are in Alphanumeric Input and look at HC, don't be surprised to see two HC pulses for each character. This is entirely normal. Since an Alphanumeric character is eight bits, this must be entered as two four-bit groups. This is accomplished by the T1 and T2 pulses generated in the ANC-1.
3. If you hit the P key to read tape and no Stop codes are recognized, don't assume immediately that you have input trouble. When the computer is in the Alphanumeric mode, the (S) key must be hit before trying to go to any other mode of operation. If this is not done, all input is blocked. Example: If the computer is in Alphanumeric mode and the P key is hit, the photo reader will run but no input will reach the computer. Therefore, no stop codes can be recognized.



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4. If you get the bright idea to hit Q before an E so that one E key will work, you might still have trouble. When the E key is hit, noise pulses might occur on the AN-SA line in the ANC-1. This will cause entry of information into line 23 in addition to the marker bit. A resistor (we tried one of 680 ohms successfully) from the AN-SA line to -20v will cure this.
5. The blade type contacts used in the new typewriter seem to be much more prone to contact bounce than the micro-switch was. An example is a long carriage return in numeric mode where contact bounce can cause a two-bit shift instead of one bit.
6. An Alphanumeric test tape is shipped with each computer. To operate this test, hit one P to read past the Number Track. Hit another P to read the loader. Compute switch to GO. A "1" should be typed out and type-in gated. At this point, if 0000002 tab (S) is typed, the input test will be selected. If 0000003 tab (S) is typed, the output test will be selected. The input test will gate Alphanumeric type-in. Then, anything typed in and followed by (S) will be typed out and type-in gated again for a new entry. The output test will type a little story and continue to repeat it as long as the Compute switch is in GO.
7. The command for Alphanumeric type-in must have a T number of L5. (Transfer must be active for four word times to insure it will be active at TF time.)
8. The special (S) key is used to terminate Input-Output instead of the regular S key.
9. The lower case L is no longer the figure "1". There is a separate "1" key.
10. The typewriter keys are mechanically interlocked on type-in. This is to prevent two keys being hit at the same time.
11. There is no feed-back to the computer from the typewriter on Numeric type out. If the typewriter is a little slow, characters may be missed. If this occurs, be sure the typewriter drive belt is set for high-speed operation.